國立高雄應用科技大學
100 學年度碩士班招生考試
電機工程系（丙組）

准考證號碼□□□□□□□□□□ （考生必須填寫）

資料結構

注意：a. 本試題共 4 題，每題 25 分，共 100 分。
b. 作答時不必抄題。
c. 考生作答前請詳閱答案卷之考生注意事項。

Please carefully answer the following questions :

1. Please use the tabular method to fill in the table (see TABLE 1) by calculating the total number of steps contributed by each and all statements in the program shown in TABLE 1. (25%)

TABLE 1

Statement	s/e Frequency Total steps

float func(float list[ ], int n)
{
  float sum = 0;
  int a;
  for(a=0; a <n; a++)
  sum += list[a];
  return sum;
}
	0
	0
	1
	0
	1
	1
	1
	0

Total	

2. Please answer the following questions: (25%)

(1). Please illustrate all binary trees for three elements: A, B, and C.

(2). How many different binary trees exist for *n* elements?

3. Refer to the following execution time of programs, please evaluate their time complexity represented in the [Big-oh] function. (25%)

(1) $59n+28$

(2) $63* 2^{n} +n^{2}$

(3) $56n^{2} +5n+15$

(4) $75n + 49$

4. Please convert the following infix expressions to postfix expressions. (25%)

(1) a*b-c+d/e-a/c

(2) (a*(b-c+d))*(e-a)*c

(3) ((a+b)+c/(p+q))/(r-s/t)